

ENTREPRENEURSHIP AND CREATIVE PARTNERSHIP OF HERITAGE MANAGEMENT IN NATIONAL MEDICINE PATENT DEVELOPMENT: A CONTRIBUTION TO CURRENT ISSUE OF PUBLIC HEALTH

TUTI RASTUTI¹, TISNI SANTIKA¹ & UTARI DEWI FATIMAH²

¹Department of International Economic Law, Pasundan University, Bandung, West Java, Indonesia

²Department of Private Law, Pasundan University, Bandung, West Java, Indonesia

ABSTRACT

The statistical data of Indonesian Law and Human Rights Ministry shows an unfortunate irony: the number of domestic patents registration in 2016 was quite low, with only 1.440 patent registrations comparing to 7.766 foreign patents registered in the exact same year, and what makes it more even unfortunate is : 96 % on medicine patents registered in Indonesia are for foreign products. As a mega-biodiversity country, Indonesia abundantly possesses ingredients for potential drugs and medicines, many of them are currently used daily as herbal medicine or alternative medicines, but this not significantly increase the amount of national medicine patent registration. On the contrary, developed countries with advanced technology are highly aggressive with their medicine patent registration. This paper aims to identify the Collective Action Theory in boosting national medicine patent development considering current issues, such as public health and technology transfer based on mutual advantages. The result shows that collective action plays the most important and significant role in managing the heritage of genetic resources and traditional medicinal knowledge, the research suggests “Hexa-Helix Collaboration” in creating creative “entrepreneurship and partnership” (entreupartnership) to significantly escalate national medicine patent development.

KEYWORDS: Genetic Resources, Traditional Medicinal Knowledge, Medicine Patents & Creative Partnership

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INTRODUCTION

In the term of medicine invention and development and its correlation with public health, there are also undeniable facts that practical needs frequently become the trigger of medical research, for example, the invention of pasteurization, anthrax and rabies vaccines conducted by Louis Pasteur back in 19th century was motivated by the need to overcome the current epidemic in the 19th century. This fact shows that intellectual property is important as a mean, the tool and the medium of rights protection and rewards for the inventor, but the relevancy lies in the practical fields depend on the context and circumstances. Patent system surely benefits the inventor and the invention should – *vice versa*- beneficial for the society.¹ Medicine production and development always require two main ingredients, the raw material and technology. There are not many countries are able to possesses these two important elements. Most of developing countries abundantly possess biodiversity and genetic resources while developed countries are capable of technological advancement. At this point, collective action and global alliance

¹Imam, Ali, (2005), How Patent Protection Helps Developing Countries, *American Intellectual Property Law Association (AIPLA) Quarterly Journal*, Volume 33, Number 4, pp.377- 395

came as determining concept.

This paper argues that there are enormous possibilities for global alliance to be implemented worldwide, especially Indonesia, global alliance will potentially become the key intersection in connecting the needs and demands and also will be able to change the opposite position of developed countries and developing countries into a sustainable collaboration to secure the public health by analyzing the global alliance using collective action theory from Elinor Ostrom. This paper therefore, aims to promote public health context in accordance with the effort of Indonesia as developing country to boost the national medicine patent development by analyzing the access to biological resources as the source of raw material for development of new medicines, patent system, the possible advantages and disadvantages of patenting pharmaceutical products and the potential positive influence of global alliance on medicine patent development global alliance on medicine patent development.

LITERATURE REVIEW

Access to Genetic Resources: Western Attitude of Biological Colonialism

It has been estimated that in fast-developing countries such as China and India, herbal medicine comprises up to 80 % of the total drugs. Further, it is expected that only small percentages of plant genetic resources (1 to 10 %) have been properly utilized as food and medicine² means that - on contrary, high percentage of plant genetic resources have not been found or utilized, while 75 -80 % of the world population mainly in the developing countries still depend on herbal medicine for primary healthcare, and based on WHO report, the use of herbal remedies throughout the world exceeds two to three times compared to the conventional drugs.³ Genetic resources and traditional knowledge are important components in both traditional health system and for future medicine development; therefore it's utterly important for mega-biodiversity countries, indigenous community, traditional knowledge holder and Pharmacy Company to work for their common interest.

Developing countries have been under biological colonialism of multinational pharmacies and developed countries, who exploited their natural and biological resources for centuries in the process of new medicine invention motivated by the material benefit and due to this process, the significant environmental destruction has occurred and in return after being patented, those natural resources have been sold back in the form of pharmaceutical products to developing countries in a relatively high prices, where most of the profit only flow to the company or developed countries. Taking *Rosy periwinkle* from Madagascar as an example, resulting well known and high price anticancer drugs "Vinblastine" and "Vincristine" as derivation that have earned approximately \$ 100 million of annual income, but neither the indigenous community nor the government of Madagascar received any equitable benefit sharing. This fact brings an irony, since the people of developing countries including Indonesia have to pay the high cost for the products made from herbs growing in their own land, which have been used since ancient times, because those herbs have been "modified" with "western attitude".

The same thing also occurred in Indonesia. Statistically, Indonesia has the second highest number of indigenous medicinal plants, after the Amazon rain forests,⁴ Indonesia also the third highest cultural biodiversity worldwide⁵ with 370

²Aejazuddin, Quazi Majaz Ahamad and Molvi Khurshid I, (2016), Herbal Medicine: A Comprehensive Review, *International Journal of Pharmaceutical Research*, Vol.8, Issue 1. p. 1.

³Shukla, Pal.S.Y, (2003), Herbal Medicine: Current Status and the Future, *Asian Pacific Journal of Cancer Prevention*, Vol . 4, p. 281-288.

⁴Elfahmi, Woerdenbag H, Kayser O, (2014), Jamu : Indonesian Traditional Herbal Medicine Toward Rational Phytopharmacological Use, *Journal of Herbal Medicine*, Vol. 4 (2), pp.51-73, <https://doi.org/10.1016/j.jhermed.2014.01.002>.

ethnic groups⁶. These facts placed Indonesia as the endless source for genetic resources and traditional medicinal knowledge as well as a beneficial spot for western biological colonialism, considering the high potential of pharmaceutical and biotechnological research opportunities. By examining local communities of Indonesia, we will potentially discover traditional medicines and traditional medicinal knowledge. Taking Lore – Lindu as example, this local community in Central Sulawesi still uses a total of 96 medical plant species⁷ although the traditional medicine knowledge gained by empirical observation and personal experiences, not formally written or recorded⁸.

RESEARCH QUESTION

- How potential is Traditional Herbal Medicine in Securing National Public Health?
- How to formulate the suitable framework in Managing Heritage of Traditional Medicine e in Securing Public Health?

THEORETICAL FRAMEWORK

This research is preceded by studying and examining the literature on theories and concept related to the theme discussed. We used collective action theory to analyze the required elements, precise and comprehensive implementation by identifying the current condition based on actual data for related institution, and further investigate the gap between the current condition (reality) and desirable condition (purpose) using qualitative research that is expected to be effective in applying legal norms, in accordance with cultural value, society's concern, and economic aspect in order to provide suggestion and recommendations. The First theoretical framework is Patent theory. A patent is a set of rights granted by a sovereign state to an inventor or assignee for a limited period of time in exchange for detailed public disclosure of an invention. An invention is a solution to a specific technological problem and is a product or a process.⁹ Patent focuses in giving the protection as the rewards for inventor for his contribution;¹⁰ this protection enables the inventor to explore the patent in order to gain economic benefits.¹¹ The patent protection for pharmaceutical products¹² especially medicines has been a major discussion and debate and have raised the uptight antagonism between developing countries and developed countries. This debate mainly related to contradictive demands regarding the patent development for medicine. Developed countries focused on publicly open access to genetic resources and maximum protection for patented medicine with exclusive rights, while developing countries demand the recognition of state sovereignty, the prior informed consent regarding the access to genetic resources and benefit sharing of the profit resulted from the patent.¹³

⁵Mittermeier R, Gil P, Goettsch – Mittermeier C, (1997), *Megadiversity : Earth's Biologically Wealthiest Nations*, Cemex, Prado Norte, Mexico.

⁶Persoon, Gerard A, Merlijn van Weerd, (2006), Biodiversity and Natural Resources Management in Insular Southeast Asia, *Island Studies Journal*, Vol 1 (1) pp. 81-108, <https://www.islandstudies.ca/sites/vre2.upei.ca.islandstudies.ca/files/u2/ISJ-1-1-2006-Persoon-vanWeerd-pp81-108.pdf>.

⁷Gailea R, Bratawinata AA, Pitopang R, Kusuma IW, (2016), The Use of Various Plant Types as Medicines by Local Community the Enclave of The Lore – Lindu National Park of Central Sulawesi, Indonesia, *Global Journal of Research on Medicinal Plants and Indigenous Medicine*, Vol. 5 (1), pp.29-40.

⁸Retnowati, Arry, Esti Anantasari, Muh. Aris Marfai, Andreas Dittmann, (2014), Environmental Ethics in Local Knowledge Responding to Climate Change : An Understanding of Seasonal Traditional Calendar Pranoto Mongso and its Phenology in Karst Area of Gunung Kidul, Yogyakarta, Indonesia, *Procedia Environmental Sciences*, Vol 20: 785-794, <https://doi.org/10.1016/j.tree.2004.09.006>.

⁹WIPO Intellectual Property Handbook: (2008), *Policy, Law and Use. Chapter 2: Fields of Intellectual Property Protection*, WIPO Secretariat, Geneva, Switzerland.

¹⁰Langinier, Corinne and GianCarlo Moschini, (2002), *The Economics of Patents : An Overview*, Working Paper 02-WP 293, Center for Agricultural and Rural Development, Iowa State University, February, pp. 2,3.

¹¹Mazzoleni, Roberto and Richard R. Nelson, (1998), *The Benefit and Cost of Strong Patent Protection : A Contribution to the current debate*, Research Policy, Elsevier Science, Volume 27, pp 273-284.

¹²Van Wijk, Jeroen and Gerd Junne, (1993), *Intellectual Property Protection of Advanced Technology, Changes in the Global Technology System : Implications and Options for Developing Countries* 27, The United Nations University., Institute for New Technologies Working Paper No. 10.

¹³Kadidal, (1997), *Shayana*, Subject – Matter Imperialism? Biodiversity, Foreign Prior Art and The Neem Patent Controversy, *IDEA : The Journal of Law and Technology*, Volume 37.

Intellectual property – patent in this context – expected to be the fair rewards for the inventor, since the introduction of new products for the diagnosis, prevention and treatment of diseases depends on a long chain of scientific research and development¹⁴. The word *alliance* can be defined as a mutually agreed association of two or more parties, in order to promote the common interest of the parties. Collective action in the form of alliance or partnership is ways in which people, company or institution can work together to effectively achieve certain objectives, whether it's common objectives or specific objectives for each participant.¹⁵ Taking Global Alliance for Vaccines and Immunization (Gavi) as example, the collective action or global alliance possibly involves national governments, public health and research institution, technical agencies, philanthropist, the pharmaceutical industry, WHO, the World Bank and UNICEF. All of them are collaborating to save children's lives and protect people's health through the widespread use of safe vaccines by provide the poorest nations with: vaccines against hepatitis B and yellow fever, flexible financial support to strengthen immunization system, safe – injection equipment to support the implementation of the national plan for injections safety.

ANALYSIS

Traditional Herbal Medicine: A Massive Potential in Securing National Public Health

Traditional medicine defines as the sum of total knowledge, skills, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health, as well as in the prevention, diagnosis, improvement or treatment of physical and mental illnesses.¹⁶ In Indonesia, traditional medicine has been widely and utilized since the earliest generations based on empirical knowledge, beliefs, and experiences of the community. Thus, traditional medicinal knowledge has been passing through generations over the centuries and led to discoveries and development of medicines.¹⁷ Having an absolute geographical and demographical advantage, most of the developing countries particularly those situated in equator such as Indonesia considered being the richest store of medicinal plants and abundant amount of traditional (medicinal) knowledge, unfortunately most of medicinal plants used as raw material collected greedily from wild stocks leading to overexploitation and habitat loss, as for traditional medicinal knowledge, many of them have been the object of misappropriation and unauthorized use.

It is widely acknowledged that genetic resources and traditional medicinal knowledge as the primary ingredients of herbal medicine hold great potential in securing public health. WHO classified 4 different classes of herbal medicine based on their origin, evolution and forms of current usage as follows:

- **Indigenous Herbal Medicines:** herbal medicines, which historically utilized in an indigenous community in certain region, well known through long usage
- **Herbal Medicines in System:** herbal medicines that have been documented and used for longtime and accepted by the countries
- **Modified Herbal Medicines:** Herbal medicines that have been modified in form, shape, methods of preparations and medical indications to meet national regulatory requirements of safety and efficacy.

¹⁴World Health Organization, (2006), *Public Health Innovation and Intellectual Property Rights*, Report of the Commission on Intellectual Property Rights, Innovation and Public Health, pp.33.

¹⁵Roberts, Alexander and William Wallace, (2004), *Alliances and Partnership*, Edinburg Business School, Heriot – Watt University, pp. 6 -7.

¹⁶World Health Organization, (2000), *General Guidelines for Methodologies on Research and Evaluation of Traditional Medicines*, WHO/EDM/TRM/2000.1, Geneva.

¹⁷Moeloe, F.A, (2006), Herbal And Traditional Medicine: National Perspectives And Policies in Indonesia, *Jurnal Bahan Alam Indonesia*, Vol. 5 No. 1, p. 293.

Indonesia recognizes more or less similar classification regarding traditional herbal medicine based on quality, safety, efficacy evaluation prior to medicine registration: (1) Jamu, (2) standardized herbal and (3) *phytopharmaca*.¹⁸

Table 1

Jamu	Standardized Herbal	<i>Phytopharmaca</i>
Herbal Products	Herbal Products	Herbal products
Having brand names	Having brand names	Having brand names
Widely used	Consist of standardized extract alone / in combination one or more powder herbs	Consist of standardized extracts alone and combination
Based on empirical evidence	Based on preclinical studies evidence	Therapeutic use based on clinical studies

Collective Action: Heritage Management of Traditional Medicine in Securing Public Health

The importance of traditional medicine is deep-rooted in Indonesia society, the production of traditional medicines rely on plants and other genetic resources as the main ingredients combined with traditional knowledge, based on empirical experiments and many of these products have not been scientifically evaluated for their safety and efficacy¹⁹. This put Indonesia's traditional medicine business in the unfavorable situation regarding the inconsistency of regulation, quality control of products and as the effect the products trapped in low customer value. The new business model appears as an urgency to create the new value of customer²⁰ in a dynamic market condition²¹ where business model innovation appears to be more determinant than innovation, investment, technology or even human resources.²² Another important pillar is legislative action. Legal certainty came to be one of the most important platforms to support new business model, It's important to have legislation that allows the relevant ministry or heritage department to represent the interest of community in the process of making agreements of heritage management²³, but unfortunately most traditional heritage provision concerned with genetic resources and traditional medicinal knowledge are not made in main legislation, resulting the lack of legal certainty and confusion on implementation.

Indonesia is never lack of biodiversity, for example, The Ministry of health has 13 hectares area for *ex situ conservation* of 850 medicinal plant species in Tawangwangu Garden, Central Java.²⁴ Statistically Indonesia has the highest National Biodiversity Index (NBI) of all ASEAN countries²⁵, these shows massive potential of pharmaceutical and biotechnological research opportunities that needs to fully capitalize with strategic collaboration and investment to maintain sustainable use of genetic resources and traditional medicinal knowledge through further research, funding and Indonesia also needs to actively participated and more open in engaging international cooperation, as no single country will be able to provide all the necessary ingredients as well as the advance technology, to effectively explore genetic resources

¹⁸Republic of Indonesia – World Health Organization, *Traditional Medicine in Republic of Indonesia : Indonesian Traditional Medicine National Strategy and Scope of Cooperation*, p. 35-36.

¹⁹Mahady, Gail B., (2001), Global Harmonization of Herbal Health Claim, *The Journal of Nutrition*, American Society for Nutritional Sciences, pp 1120s-1123s.

²⁰Hamel, Gary, (2001), *Strategy Innovation and the Quest for Value*, in Cusumano, Michael, A and Constantinos C. Markides, *Strategic Thinking For The Next Economy*, MIT Sloan Management Review.

²¹McGrath, Rita Gunther, *Business Models: A Discovery Driven Approach*, Long Range Planning, 2001, Vol.43, pp.247 – 261.

²²Chesbrough, Henry, Business Model Innovation: Its Not Just About Technology Anymore, *Strategy & Leadership*, 2007, Vol. 35, No. 6, pp.12-17.

²³Ndoro, Webber, Herman Kiriama and George Abungu, (2008), *Cultural Heritage and The Law : Protecting Immovable Heritage in English – Speaking Countries of Sub – Saharan Africa*, International Centre for The Study of the Preservation and Restoration of Cultural Property, p. 54.

²⁴Sabran, Muhamad, (2016), *Plant Genetic Resources Management in Indonesia : Conservation, Uses and Policy*, http://biogen.litbang.pertanian.go.id/codevelopment/wp-content/uploads/PDF/Sabran_2016.pdf.

²⁵The Convention on Biological Diversity uses the National Biodiversity Index (NBI) to quantify biodiversity. NBI estimates country richness and endemism in four terrestrial vertebrate classes and vascular plants, index values range between 1.000 (maximum) and 0,000 (minimum) and includes some adjustment to country size.

and traditional medicinal knowledge and massively produce the necessary medicines. For national scope strategy, entrepreneurship came as the first and determinant milestone although research shows that entrepreneurship alone would be insufficient; Indonesia needs to build creative “entrepreneurship and partnership” as we called it “*entrepартnership*” between interested parties and stake holders. In accordance with Article 18.4, Trade Related Aspects of Intellectual Property Rights Agreement (*TRIPs Agreement*), we suggest “Hexa Helix Collaboration” involving the government, academic, local / indigenous community, business enterprises, media and financial institution in achieving primary goals.

- **Government** plays the lead role in providing comprehensive legislation and proper control of overall partnership implementation and entrepreneurship stimulation.
- **Academic** concentrate in exploring, collecting of information, conducting the research and development of potential utilization of genetic resources and traditional medicinal knowledge in creating new medicine, collections of scientific data and clinical studies of traditional medicines.
- **Local/ Indigenous Community** plays the role as the access provider, sharing of knowledge data provider and as custodian of genetic resources and traditional medicinal knowledge.
- **Business Enterprises** play the role in creating economically visible products, advice and technical support in ensuring safety, efficacy, and marketability²⁶ and further provide market access in a broader scale.
- **Media:** increasing publication will make contribution in preventing misappropriation and unauthorized claim of genetic resources and traditional medicinal knowledge as well as educating the community to raise the awareness of natural resources potential and the danger of biodiversity piracy.
- **Financial Institution** plays the role in providing the funding of research projects and product development.

DISCUSSIONS

The national medicine patent development in Indonesia stuck in unfortunate level, as the effect of the challenges and hardship to level up from indigenous herbal medicine/jamu to modified herbal medicine/*phytopharmaca*, from a small business/home industry to larger industry since not all herbal medicine companies have mastered and used IT and technology, therefore, they lack innovation to gain a competitive edge in the national/global market. In order to be effectively contributed in national medicine development and securing public health, it's necessary for the traditional medical producer to shift from undifferentiated business into recognizable business by focused in products, gaining customer awareness and loyalty by creating sustainability between market needs and product offering²⁷ through these various steps:

- Initiate the accumulation of product knowledge to create more variation of the products.
- Increase the comprehension of market knowledge to intensify the sensibility of consumer's need and market trend to create new products based on external ideas.
- Broaden the market scope, for example by creating the partnership with the distributor.

²⁶Ministry of Trade of The Republic of Indonesia, (2009), *Indonesian Herbal : The Traditional Therapy*, Trade Research and Development Agency, Ministry of Trade, Republic of Indonesia, p. 24.

²⁷Sumarsono, Asih and Mark Hanusz, (2007), *Family Business : A Case Study of Nyonya Meneer, One of Indonesia's Most Successful Traditional Medicine Companies*, Singapore : Equinox Publishing.

In connection with the collective action theory, this research found that complex linkages, reciprocity, and interdependency between the reputations of participants, reciprocal trust among participants affect the level of cooperation and net of common benefits.²⁸ Each participant required to acquire a reputation of being trustworthy so that others also eager to cooperate.²⁹ Its critical importance for further discussion and research concerning the determinant factors to the success of collaboration including reputation of each participant, trust between participants and reciprocity in cooperation supported by communication and information.

CONCLUSIONS

Collective action plays the most significant role in heritage management of genetic resources and traditional medicinal knowledge in national medicine patent development. Entrepreneurship alone would be insufficient; Indonesia needs to build creative “entrepreneurship and partnership between interested parties and stakeholders to fully maintain sustainable use of genetic resources and traditional medicinal knowledge through targeted and strategic investment to ensure long time value and benefits. In accordance with Article 18.4 Trade-Related Aspects of Intellectual Property Rights Agreement (*TRIPs Agreement*), we suggest “Hexa Helix Collaboration” involving the government, academic, local / indigenous community, business enterprises, media and financial institution in achieving primary goals for common benefits.

REFERENCES

1. Aejazuddin, Quazi Majaz Ahamad and Molvi Khurshid I, (2016), *Herbal Medicine: A Comprehensive Review*, *International Journal of Pharmaceutical Research*, Vol.8 (1).
2. Chesbrough, (2007), Henry, *Business Model Innovation: Its Not Just About Technology Anymore*, *Strategy & Leadership*, Vol. 35, No. 6.
3. Elfahmi, Woerdenbag H, Kayser O, (2014), *Jamu : Indonesian Traditional Herbal Medicine Toward Rational Phytopharmacological Use*, *Journal of Herbal Medicine*, Vol. 4 (2), pp.51-73, <https://doi.org/10.1016/j.jhermed.2014.01.002>.
4. Fukuyama, Francis, (1995), *Trust : The Social Virtues and the Creation of Prosperity*, Free Press, New York
5. Gailea R, Bratawinata AA, Pitopang R, Kusuma IW, (2016), *The Use of Various Plant Types as Medicines by Local Community the Enclave of The Lore – Lindu National Park of Central Sulawesi, Indonesia*, *Global Journal of Research on Medicinal Plants and Indigenous Medicine*, Vol. 5 (1).
6. Hamel, Gary, (2001), *Strategy Innovation and the Quest for Value*, in Cusumano, Michael, A and Constantinos C. Markides, *Strategic Thinking For The Next Economy*, MIT Sloan Management Review.
7. Imam, Ali, (2005), *How Patent Protection Helps Developing Countries*, *American Intellectual Property Law Association (AIPLA) Quarterly Journal*, Volume 33, Number 4.
8. Kadidal, Shayana, (1997), *Subject – Matter Imperialism? Biodiversity, Foreign Prior Art and The Neem Patent Controversy*, *IDEA : The Journal of Law and Technology*, Volume 37.
9. Langinier, Corinne and GianCarlo Moschini, (2002), *The Economics of Patents : An Overview*, Working Paper 02-WP 293, Center for Agricultural and Rural Development, Iowa State University.

²⁸Ostrom, Elinor, (2017), *Collective Action Theory*, In Boix, Charles and Susan C. Stokes (Eds), *The Oxford Handbook of Comparative Politics*, Oxford University Press, Oxford, UK, p, 186-208.

²⁹Fukuyama, Francis, (1995), *Trust : The Social Virtues and the Creation of Prosperity*, Free Press, New York.

10. Mahady, Gail B., (2001), *Global Harmonization of Herbal Health Claim*, *The Journal of Nutrition*, American Society for Nutritional Sciences.
11. Alou, I. N., van Asten, P. J., & Tenywa, M. M. (2014). *Biophysical and Crop Management Gradients Limiting Yields of East African Highland Banana (Musa Spp. AAA-EA) within Farms in Low Input Cropping Systems*. *International Journal of Agricultural Science and Research (IJASR)*, 4(3), 27-43.
12. Mazzoleni, Roberto and Richard R. Nelson, (1998), *The Benefit and Cost of Strong Patent Protection : A Contribution to the current debate*, *Research Policy*, Elsevier Science, Volume 27.
13. McGrath, Rita Gunther, (2001), *Business Models: A Discovery Driven Approach*, *Long Range Planning*, Vol.43.
14. Ministry of Trade of The Republic of Indonesia, (2009), *Indonesian Herbal: The Traditional Therapy*, Trade Research and Development Agency, Ministry of Trade, Republic of Indonesia.
15. Mittermeier R, Gil P, Goettsch – Mittermeier C, (1997), *Megadiversity : Earth's Biologically Wealthiest Nations*, Cemex, Prado Norte, Mexico.
16. Moeloek, F.A, (2006), *Herbal And Traditional Medicine: National Perspectives And Policies in Indonesia*, *Jurnal Bahan Alam Indonesia*, Vol. 5 No. 1.
17. Ndoro, Webber, Herman Kiriamu and George Abungu, (2008), *Cultural Heritage and The Law : Protecting Immovable Heritage in English – Speaking Countries of Sub – Saharan Africa*, *International Centre for The Study of the Preservation and Restoration of Cultural Property*.
18. Ostrom, Elinor, (2017), *Collective Action Theory*, In Boix, Charles and Susan C. Stokes (Eds), *The Oxford Handbook of Comparative Politics*, Oxford University Press, Oxford, UK.
19. Sidin, J. P., & Wafa, S. A. W. S. K. (2014). *Quality management implementation and quality of production in Malaysia's manufacturing companies*. *International Journal of Research in Business Management*, 2(3), 53-60.
20. Persoon, Gerard A, Merlijn van Weerd, (2006), *Biodiversity and Natural Resources Management in Insular Southeast Asia*, *Island Studies Journal*, Vol 1 (1) pp. 81-108, <https://www.islandstudies.ca/sites/vre2.upei.ca.islandstudies.ca/files/u2/ISJ-1-1-2006-Persoon-vanWeerd-pp81-108.pdf>.
21. Republic of Indonesia – World Health Organization, *traditional Medicine in Republic of Indonesia : Indonesian Traditional Medicine National Strategy and Scope of Cooperation*.
22. Retnowati, Arry, Esti Anantasari, Muh. Aris Marfai, Andreas Dittmann, (2014), *Environmental Ethics in Local Knowledge Responding to Climate Change : An Understanding of Seasonal Traditional Calendar Pranoto Mongso and its Phenology in Karst Area of Gunung Kidul, Yogyakarta, Indonesia*, *Procedia Environmental Sciences*, Vol 20: 785-794, <https://doi.org/10.1016/j.tree.2004.09.006>.
23. Roberts, Alexander and William Wallace, (2004), *Alliances and Partnership*, *Edinburg Business School*, Heriot – Watt University, pp. 6 -7
24. Sabran, Muhamad, (2016), *Plant Genetic Resources Management in Indonesia : Conservation, Uses and Policy*, http://biogen.litbang.pertanian.go.id/codevelopment/wp-content/uploads/PDF/Sabran_2016.pdf.
25. Shukla, Pal. S.Y, (2003), *Herbal Medicine: Current Status and the Future*, *Asian Pacific Journal of Cancer Prevention*, Vol. 4.
26. Sumarsono, Asih and Mark Hanusz, (2007), *Family Business : A Case Study of Nyonya Meneer, One of Indonesia's Most Successful Traditional Medicine Companies*, Singapore : Equinox Publishing.

27. Van Wijk, Jeroen and Gerd Junne, (1993), *Intellectual Property Protection of Advanced Technology, Changes in the Global Technology System : Implications and Options for Developing Countries* 27, The United Nations Universit., Institute for New Technologies Working Paper No. 10.
28. Toby, A. (2014). *Working capital management policy and corporate profitability of Nigerian quoted companies: A sectoral analysis*. *International Journal of Financial Management (IJFM)*, 3(1), 9-20.
29. *WIPO Intellectual Property Handbook: (2008) Policy, Law and Use. Chapter 2: Fields of Intellectual Property Protection* WIPO.
30. *World Health Organization, (2000), General Guidelines for Methodologies on Research and Evaluation of Traditional Medicines, WHO/EDM/TRM/2000.1, Geneva.*
31. *World Health Organization, (2006), Public Health Innovation and Intellectual Property Rights, Report of the Commission on Intellectual Property Rights, Innovation and Public Health.*
32. *WIPO Intellectual Property Handbook: (2008), Policy, Law and Use. Chapter 2: Fields of Intellectual Property Protection, WIPO Secretariat, Geneva, Switzerland.*

